

WHAT IS CLAIMED IS:

1. A motion controlled handheld device comprising:
 - a display having a viewable surface and operable to generate an image;
 - a gesture database maintaining a plurality of predefined gestures, each gesture
 - 5 defined by a motion of the device with respect to a first position of the device;
 - an application having a plurality of predefined commands;
 - a motion detection module operable to detect motion of the handheld device within three dimensions and to identify components of the motion in relation to the viewable surface;
 - 10 a user interface operable to receive user input associating selected ones of the gestures with corresponding ones of the commands;
 - a gesture mapping database comprising a command map for the application, the command map comprising mappings of the selected gestures to the corresponding commands as indicated by the user input; and
 - 15 a control module operable to load the application, to track movement of the handheld device using the motion detection module, to compare the tracked movement against the gestures to determine a matching one of the gestures, to identify, using the command map, the command mapped to the matching gesture, and to perform the identified command using the application.
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2. The motion controlled handheld device of Claim 1, wherein:
 - the user input identifies a particular one of the gestures and a plurality of the predefined commands;
 - the command map further comprises a mapping of the identified gesture to the
 - 25 identified plurality of the predefined commands; and
 - the control module is further operable, in response to the matching gesture being the particular one of the gestures, to perform each of the plurality of the predefined commands.

3. The motion controlled handheld device of Claim 1, wherein the application has a first application state and a second application state, and the command map for the application, in response to a same gesture, maps a first predefined command in the first application state and a second predefined command
5 in the second application state.

4. The motion controlled handheld device of Claim 1, wherein the control module is further operable to:

- detect an indication to record a new gesture;
- 10 detect a stabilization of the components of the motion of the device;
- upon detecting the stabilization, determine a base reference position;
- record movement of the device with respect to the base reference position;
- detect an indication to stop recording the new gesture;
- define the new gesture using the recorded movement of the device with
15 respect to the base reference position; and
- store the new gesture in the gesture database; and wherein
- the user interface is further operable to receive user input associating the new gesture with at least one of the commands.

20 5. The motion controlled handheld device of Claim 4, wherein detecting the indication to stop recording comprises detecting a second stabilization of the movement of the device.

25 6. The motion controlled handheld device of Claim 4, wherein detecting the indication to record comprises a selection of an input associated with a user interface of the device.

7. The motion controlled handheld device of Claim 1, further comprising:
a first accelerometer operable to detect acceleration along a first axis;
a second accelerometer operable to detect acceleration along a second axis, the
second axis perpendicular to the first axis; and

5 a third accelerometer operable to detect acceleration along a third axis, the
third axis perpendicular to the first axis and perpendicular to the second axis; and
wherein:

the gesture database further defines each of the predefined gestures using a
sequence of accelerations;

10 the motion detection module is further operable to detect motion of the device
using accelerations measured by the first accelerometer, the second accelerometer,
and the third accelerometer; and

the control module is further operable to match the accelerations measured by
the motion detection module against gesture definitions in the gesture database to
15 identify particular ones of the predefined gestures.

8. A method for controlling a handheld device comprising:
generating an image on a viewable surface of the handheld device;
maintaining a gesture database comprising a plurality of predefined gestures,
each gesture defined by a motion of the device with respect to a first position of the
5 device;
maintaining an application having a plurality of predefined commands;
receiving user input associating selected ones of the gestures with
corresponding ones of the commands;
maintaining a gesture mapping database comprising a command map for the
10 application and updating the command map to comprise mappings of the selected
gestures to the corresponding commands as indicated by the user input; and
loading the application;
tracking movement of the handheld device using the motion detection module
in relation to the viewable surface;
15 comparing the tracked movement against the gestures to determine a matching
gesture;
identifying, using the selected command map, the predefined command
mapped to the matching gesture; and
performing the identified command using the loaded application.
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9. The method of Claim 8, wherein:
the user input identifies a particular one of the gestures and a plurality of the
predefined commands;
the command map further comprises a mapping of the identified gesture to the
25 identified plurality of the predefined commands; and further comprising
in response to the matching gesture being the particular one of the gestures,
performing each of the plurality of the predefined commands.
10. The method of Claim 8, wherein the application has a first application
30 state and a second application state, and the command map for the application, in
response to a same gesture, maps a first predefined command in the first application
state and a second predefined command in the second application state.

11. The method of Claim 8, further comprising:
detecting an indication to record a new gesture;
detecting a stabilization of the components of the motion of the device;
5 upon detecting the stabilization, determining a base reference position;
recording movement of the device with respect to the base reference position;
detecting an indication to stop recording the new gesture;
defining the new gesture using the recorded movement of the device with
respect to the base reference position;
10 storing the new gesture in the gesture database; and
receiving user input associating the new gesture with at least one of the
commands.

12. The method of Claim 11, wherein detecting the indication to stop
15 recording comprises detecting a second stabilization of the movement of the device.

13. The method of Claim 11, wherein detecting the indication to record
comprises a selection of an input associated with a user interface of the device.

20 14. The method of Claim 8, wherein the gesture database further defines
each of the gestures using a sequence of accelerations; the method further comprising:
detecting acceleration along a first axis;
detecting acceleration along a second axis, the second axis perpendicular to
the first axis; and
25 detecting acceleration along a third axis, the third axis perpendicular to the
first axis and perpendicular to the second axis;
detecting motion of the device using accelerations measured by the first
accelerometer, the second accelerometer, and the third accelerometer; and
matching the accelerations against gesture definitions in the gesture database
30 to identify potential indicated ones of the predefined gestures.

15. Logic for controlling a handheld device, the logic embodied in a computer readable medium and operable when executed to perform the steps of:

generating an image on a viewable surface of the handheld device;

maintaining a gesture database comprising a plurality of predefined gestures,
5 each gesture defined by a motion of the device with respect to a first position of the device;

maintaining an application having a plurality of predefined commands;

receiving user input associating selected ones of the gestures with
corresponding ones of the commands;

10 maintaining a gesture mapping database comprising a command map for the application and updating the command map to comprise mappings of the selected gestures to the corresponding commands as indicated by the user input; and

loading the application;

tracking movement of the handheld device using the motion detection module
15 in relation to the viewable surface;

comparing the tracked movement against the gestures to determine a matching gesture;

identifying, using the selected command map, the predefined command mapped to the matching gesture;

20 performing the identified command using the loaded application.

16. The logic of Claim 15, wherein:

the user input identifies a particular one of the gestures and a plurality of the predefined commands;

25 the command map further comprises a mapping of the identified gesture to the identified plurality of the predefined commands; and further operable when executed:

in response to the matching gesture being the particular one of the gestures, to perform each of the plurality of the predefined commands.

17. The logic of Claim 15, wherein the application has a first application state and a second application state, and the command map for the application, in response to a same gesture, maps a first predefined command in the first application state and a second predefined command in the second application state.

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18. The logic of Claim 15, further operable when executed to perform the steps of:

- detecting an indication to record a new gesture;
- detecting a stabilization of the components of the motion of the device;
- 10 upon detecting the stabilization, determining a base reference position;
- recording movement of the device with respect to the base reference position;
- detecting an indication to stop recording the new gesture;
- defining the new gesture using the recorded movement of the device with respect to the base reference position;
- 15 storing the new gesture in the gesture database; and
- receiving user input associating the new gesture with at least one of the commands.

19. The logic of Claim 18, wherein detecting the indication to stop
20 recording comprises detecting a second stabilization of the movement of the device.

20. The logic of Claim 15, wherein the gesture database further defines each of the gestures using a sequence of accelerations; the logic further operable when executed to perform the steps of:

detecting acceleration along a first axis;

5 detecting acceleration along a second axis, the second axis perpendicular to the first axis; and

detecting acceleration along a third axis, the third axis perpendicular to the first axis and perpendicular to the second axis;

10 detecting motion of the device using accelerations measured by the first accelerometer, the second accelerometer, and the third accelerometer; and

matching the accelerations against gesture definitions in the gesture database to identify potential indicated ones of the predefined gestures.

21. A motion controlled handheld device comprising:
- means for generating an image on a viewable surface of the handheld device;
 - means for maintaining a gesture database comprising a plurality of predefined gestures, each gesture defined by a motion of the device with respect to a first position
 - 5 of the device;
 - means for maintaining an application having a plurality of predefined commands;
 - means for receiving user input associating selected ones of the gestures with corresponding ones of the commands;
 - 10 means for maintaining a gesture mapping database comprising a command map for the application and updating the command map to comprise mappings of the selected gestures to the corresponding commands as indicated by the user input; and
 - means for loading the application;
 - means for tracking movement of the handheld device using the motion
 - 15 detection module in relation to the viewable surface;
 - means for comparing the tracked movement against the gestures to determine a matching gesture;
 - means for identifying, using the selected command map, the predefined command mapped to the matching gesture;
 - 20 means for performing the identified command using the loaded application.